

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (withdrawn) An apparatus for manufacturing a metal nanotube comprising a cathode and an anode opposingly disposed, a film having a penetrated hole provided on said cathode and an electrolyte solution filled between said cathode and said anode, wherein metal is precipitated on the wall surface of said penetrated hole,

wherein said cathode is a thin metal film having a thickness of 10 to 80 nm.

2. (withdrawn) The apparatus for manufacturing a metal nanotube of Claim 1, wherein said cathode comprises gold, copper, a gold based alloy, a copper based alloy or a platinum-palladium alloy.

3. (withdrawn) The apparatus for manufacturing a metal nanotube of Claim 1, wherein said cathode is a thin metal film obtained by an electrochemical processing of nanostructured tailored materials.

4. (withdrawn) The apparatus for manufacturing a metal nanotube of Claim 1, wherein said anode comprises nickel, cobalt, iron or an alloy thereof.

5. (withdrawn) The apparatus for manufacturing a metal nanotube of Claim 1, wherein the diameter of said penetrated hole is 15 to 500 nm.

6. (withdrawn) The apparatus for manufacturing a metal nanotube of Claim 1, wherein said cathode and said anode are in a flat plate shape, and said cathode is disposed horizontally at an upper position and said anode is disposed horizontally at a lower position with respect to gravity.

7. (currently amended) A process for manufacturing a metal nanotube comprising:

a step for providing a film having a penetrated hole;
a step of providing a thin metal film for forming a cathode having a thickness of 10 to 80 nm and a pinhole on one surface of a the film having a penetrated hole, wherein the pinhole is formed on the penetrated hole, and the cathode is exposed on the bottom of the penetrated hole;
a step for contacting the surface of the cathode with a container;
a step of for filling an electrolyte solution containing metal ions between the cathode having said thin metal film and an anode; and
a step for applying a voltage to electrolyze said electrolyte solution, thereby the electrolyte solution to electrochemically precipitating precipitate a metal on the wall-inner surface of said the penetrated hole and generate gas in the pinhole and the penetrated hole; and

a step of ~~for~~ immersing the film ~~on which said metal is~~
~~precipitated in a solvent to remove said the film having a penetrated hole,~~
~~thereby obtaining, to give~~ a metal nanotube.

8. (currently amended) The process for manufacturing a metal nanotube of Claim 7, wherein said ~~thin metal film cathode~~ comprises gold, copper, a gold based alloy, a copper based alloy or a platinum-palladium alloy.

9. (previously presented) The process for manufacturing a metal nanotube of Claim 7 , wherein the shape of said metal nanotube is controlled by adjusting at least one condition selected from the pH of said electrolyte solution and the applied voltage in said electrolysis.

10. (original) The process for manufacturing a metal nanotube of Claim 9, wherein the pH of said electrolyte solution containing metal is 0 to 5.5 and the applied voltage in said electrolysis is -0.5 to -1.5 V.